In Reply : Simple Preoperative Patient-Reported Factors Predict Adverse Outcome After Elective Cranial Neurosurgery

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In Reply: Simple Preoperative Patient-Reported Factors Predict Adverse Outcome After Elective Cranial Neurosurgery

To the Editor:

We would like to take this opportunity to thank Dr Bunevicius for his interest and important observations and comments regarding patient-centered health status as a tool for preoperative risk stratification and shared decision making in neurosurgery.[1] We would like to emphasize that our results[2] are among the first reports on the use of direct patient-reported factors in the preoperative setting in patients undergoing elective cranial neurosurgery. Our simple composite score demonstrates the applicability and additional value of patient-reported measures in patient safety and outcome analyses. As mentioned in our conclusions, further studies are needed to improve and validate neurosurgery-specific patient-centered questionnaires or risk scores.

Dr Bunevicius highlights in his letter[1] that cognitive functioning and physical status decline with advancing age makes it necessary to include the patient's age and disease severity in the risk stratification equation. Indeed, on a population level, cognitive decline and medical comorbidities increase with age. However, age itself is nowadays a poor surrogate for cognitive capacity and physical condition, as large individual variation exists especially in countries with long life expectancy. In our hospital, we have shown that age alone is a poor determinant for surgical decision making even in a cohort of elderly patients undergoing surgery for traumatic brain hemorrhage.[3] Based on our results and experience,[4] other factors besides age should be included in the preoperative risk stratification regime and decision-making processes. In a post hoc multivariable binary logistic regression analyses, a high score ($\geq$2) in our simple combination of patient-reported factors remained a significant predictor of postoperative major morbidity ($P < .001$, odds ratio 4.443, 95% confidence interval 2.072-9.526, Hosmer–Lemeshow 0.927) unlike advanced age or high Charlson comorbidity score.

Our cohort comprised 17 patients older than 75 yr, and the oldest was 83. None of these 17 elderly patients died in-hospital or within 30 d of surgery. Furthermore, 59% of these patients reported their self-reported health status as unchanged or improved at postoperative day 30. Interestingly, in the subgroup of elderly (>75 yr) patients, those with preoperative cognitive dysfunction (TYM < 45) were more prone to experience postoperative major morbidity than those with normal cognition (31% vs 0%, respectively). In our cohort, advanced age was not associated with the inability to climb 2 flights of stairs ($P = .532$) or poor subjective health status ($P = .064$). High Charlson comorbidity score was associated with the inability to climb 2 flights of stairs ($P = .004$) and poor subjective health status ($P = .002$) but not with cognitive dysfunction ($P = .114$). We did observe an association between cognitive dysfunction and advanced age ($P \leq .001$) but this association, however, does not justify the use of advanced age as a surrogate for cognitive function in the preoperative risk assessment of individual patients. In brief, the assumption of a linear correlation between advancing age and cognitive decline seems to be vague. The ever-aging population challenges health care providers to develop sophisticated tools to identify individuals who may still benefit from major surgery at a high age and with limited recovery capacities. Such tools are likely to contribute to patient-specific preoperative planning, and possibly tailored enhanced recovery programs to avoid pitfalls such as postoperative delirium that could lead to prolonged hospitalization and further complications.[5]

Dr Bunevicius pointed out that preoperative medications including steroids may play a role in the risk of postoperative systemic complications. Our data did not include comprehensive information on preoperative medications, but undoubtedly many of the tumor patients did receive steroids preoperatively. Whether the steroid use has contributed somehow to the findings remains unclear.

The reliability of self-reporting is sometimes a cause for concern, as suggested by Dr Bunevicius. Studies addressing the issue have yielded controversial results.[6-8] On the other hand, one must bear in mind that the reliability of conventional risk scores, such as the American Society of Anesthesiologist score, is often undermined by high inter-rater variability.[9] The fundamental question is, do we trust the patients themselves in answering simple questions or do we rely on fellow doctors making subjective interpretations of patients' physical status. Self-filled questionnaires can certainly aid in avoiding, for example, doctors' misinterpretations based on limited clinical experience, explicit prejudices, and implicit biases. Furthermore, moving toward a more patient-centered approach is likely to cut down overburdening of health care resources.

Our study serves to show that collecting patient-reported data is feasible even in a busy setting, such as our large tertiary neurosurgical center. Disease-specific and situation-specific patient-centered measures would be ideal as proposed by Dr Bunevicius. However, formulating disease or even situation-specific risk scores or prediction models requires quite a significant number of patients. Thus, it may not be realistic to establish reliable disease-specific or even situation-specific measures in most neurosurgical centers due to low patient volumes.

Even the most widely used scores in neurosurgery are not designed and suitable for this patient population and purpose.[10] Thus, we fully agree with Dr Bunevicius that only valid and reliable instruments should be adopted for wide clinical use. Ideally, such an instrument would also efficiently facilitate communicating the risks to individual patients thus promoting equality in health care and shared decision making. We hope that our preliminary work encourages the neurosurgical field

to conduct further studies evaluating optimal patient-centered preoperative assessment strategies for neurosurgical patients.

Disclosure

The authors have no personal, financial, or institutional interest in any of the drugs, materials, or devices described in this article.

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